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PTO/SB/21 (09-04)

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# TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	10/615,673
Filing Date	October 15, 2001
First Named Inventor	Jeffrey W. Moe
Art Unit	3644
Examiner Name	Dinh, Tien Quang
Attorney Docket Number	104874-142119

## ENCLOSURES (Check all that apply)

<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement (Supplemental) <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Reply to Missing Parts/ Incomplete Application <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): <b>Reply Brief</b>
<div>Remarks</div>		

## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Goodwin Procter LLP		
Signature			
Printed name	Lindsey Repose		
Date	June 30, 2006	Reg. No.	54,395

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Signature			
Typed or printed name	Lindsey Repose	Date	June 30, 2006

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PTO/SB/17 (01-06)

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# FEE TRANSMITTAL

## For FY 2006

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$)

**Complete if Known**

Application Number	10/615,673
Filing Date	October 15, 2001
First Named Inventor	Jeffrey W. Moe
Examiner Name	Dinh, Tien Quang
Art Unit	3644
Attorney Docket No.	104874-142119

**METHOD OF PAYMENT (check all that apply)**☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): \_\_\_\_\_☒ Deposit Account Deposit Account Number: 06-0923 Deposit Account Name: \_\_\_\_\_

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee☒ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayments

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**FEE CALCULATION (All the fees below are due upon filing or may be subject to a surcharge.)****1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

**2. EXCESS CLAIM FEES****Fee Description**

Each claim over 20 (including Reissues)

Each independent claim over 3 (including Reissues)

Multiple dependent claims

Fee (\$)	Small Entity Fee (\$)
50	25
200	100
360	180

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
15	- 20 or HP =	x	=

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
5	- 3 or HP =	2 x	=

HP = highest number of independent claims paid for, if greater than 3.

**3. APPLICATION SIZE FEE**

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
- 100 =	/ 50 =	(round up to a whole number) x	=	

**4. OTHER FEE(S)**

Non-English Specification, \$130 fee (no small entity discount)

Other (e.g., late filing surcharge): \_\_\_\_\_

Fees Paid (\$)

**SUBMITTED BY**

Signature

Registration No.  
(Attorney/Agent) 54,395

Telephone 212-459-7393

Name (Print/Type) Lindsey Repose

Date June 30, 2006

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PATENT  
Attorney Docket No. 104874-142119

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

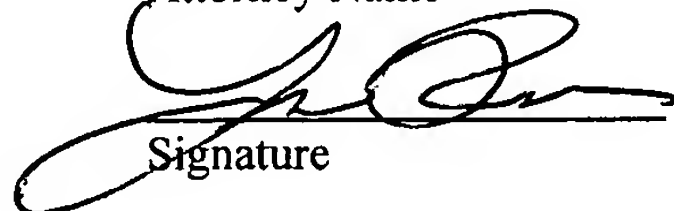
APPLICANTS: Moe *et al.* GROUP ART UNIT: 3644  
SERIAL NO.: 10/615,673  
FILING DATE: October 15, 2001 EXAMINER: Dinh, Tien Quang  
TITLE: METHOD AND APPARATUS FOR NOISE ABATEMENT AND ICE  
PROTECTION OF AN AIRCRAFT ENGINE NACELLE INLET LIP

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6/30/06  
Date of Deposit

Lindsey A Repose  
Attorney Name

  
Signature

54,395  
PTO Registration No.

6/30/06  
Date of Signature

**REPLY BRIEF**

This Reply Brief is submitted in accordance with 37 C.F.R. § 41.37 and in response to the Examiner's Answer mailed on May 2, 2006, in response to the Appeal Brief filed on February 15, 2006. The Commissioner is hereby authorized to charge undersigned counsel's deposit account number 06-0923 with reference to docket number 104874-142119 to cover any additional fees required fee for the filing of this Reply Brief.

### **REAL PARTY IN INTEREST**

The real party in interest in this appeal is Rohr Inc., the assignee of the above-identified patent application, pursuant to an assignment recorded in the records of the U.S. Patent and Trademark Office on December 22, 2003, at Reel 014819, beginning at Frame 0782.

### **RELATED APPEALS AND INTERFERENCES**

There are no other prior or pending appeals, interferences or judicial proceedings known to appellant, appellants' legal representative or the assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the present pending appeal.

### **STATUS OF CLAIMS**

The application as filed contained Claims 1-20. During prosecution, Claims 14, 15, and 17-20 were cancelled. Pending Claims 1-13 and 16 have been finally rejected and are the subject of this appeal.

### **STATUS OF AMENDMENTS**

In further response to the Final Office Action mailed on March 8, 2005, a Supplemental Amendment after Final Rejection was filed on May 27, 2005. According to the Advisory Action mailed July 5, 2005, the Supplemental Amendment After Final Rejection has been entered. No further amendments were filed subsequent to the Advisory Action.

### **SUMMARY OF CLAIMED SUBJECT MATTER**

The invention generally relates to an apparatus for achieving both noise abatement and ice protection in the nacelle inlet lip of a gas turbine engine. The desired noise abatement and ice protection capabilities are achieved by a unique approach through the combination of an electrically powered ice protection system located on the nacelle inlet lip skin, wherein the surface of the inlet lip skin is an acoustically porous skin of a honeycomb core noise abatement structure.

Independent Claim 1 relates to an acoustic panel for use in the inlet lip portion of a gas turbine nacelle which includes a solid back skin, an acoustically permeable front skin, a honeycomb cell structure located between the front and back skin, and an ice protection system affixed to the front skin. The ice protection system includes an acoustically permeable and electrically and thermally conductive structure which in turn includes means for connection to an electrical power source, and the structure is thermally insulated from the front skin. The “means for connection to an electrical power source” set forth in Claim 1 are described as wiring or other conventional techniques at paragraphs [0013] and [0031] of the specification, or a temperature

sensor installed in a closed loop scheme with an electronic controller as described in paragraph [0034] of the specification and depicted in Figure 3 of the drawings.

Independent Claim 16 relates to an inlet for an aircraft gas turbine engine nacelle which includes an acoustical panel structure including a solid back skin, an acoustically permeable front skin, and a honeycomb cell structure there between, and an ice protection system located on the front skin. The ice protection system includes an acoustically permeable and electrically and thermally conductive structure in electrical connection to an electrical power source, and the ice protection system is thermally insulated from the front skin.

**GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

The grounds of rejection to be reviewed are as follows:

Claims 1-9 and 16 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable as obvious over U.S. Patent No. 4,291,079 to Hom et al. (hereinafter "Hom") or U.S. Patent No. 5,653,836 to Mnich et al. (hereinafter "Mnich") in view of U.S. Patent No. 3,800,121 to Dean et al. (hereinafter "Dean").

Claims 10-13 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable as obvious over Hom and Mnich in view of Dean and further in view of U.S. Patent No. 4,514,619 to Kugelman et al. (hereinafter "Kugelman") or U.S. Patent No. 4,036,457 to Volkner et al. (hereinafter "Volkner").

## ARGUMENT

For reasons set forth below, Appellants respectfully appeal the final rejection of Claims 1-13 and 16. In the ensuing argument, we address each of the Examiner's grouped rejections in turn.

***1. Claims 1-9 and 16 constitute nonobvious subject matter and are patentable under 35 U.S.C. § 103(a) over Hom or Mnich in view of Dean.***

Independent Claim 1 is directed to an acoustic panel for use in the inlet lip portion (exemplified by (20) in Figures 1 and 2A) of a gas turbine engine nacelle (exemplified by (21) in Figures 1 and 2A). The acoustic panel (exemplified by (104) in Figures 2A and 2B) includes a solid back skin (exemplified by (109) in Figures 2A and 2B), an acoustically permeable front skin (exemplified by (110) in Figures 2A and 2B), a honeycomb cell structure (exemplified by (108) in Figures 2A and 2B) located between the front skin and back skin, and an ice protection system which includes an acoustically permeable and electrically and thermally conductive structure (exemplified by (112) in Figures 2A and 2B), which includes means for connection to an electrical power source, in which the ice protection system is thermally insulated from the permeable front skin.

Claims 2-9 are ultimately dependent from and therefore incorporate the limitations of Claim 1.

Independent Claim 16 is directed to an inlet lip (exemplified by (20) in Figures 1 and 2A) for an aircraft gas turbine engine nacelle (exemplified by (21) in Figures 1 and 2A). The inlet lip includes an acoustic panel (exemplified by (104) in Figures 2A and 2B) which includes a solid back skin (exemplified (109) in Figures 2A and 2B), an acoustically permeable front skin (exemplified by (110) in Figures 2A and 2B), a honeycomb cell structure therebetween (exemplified by (108) in Figures 2A and 2B), and an ice protection system which includes an acoustically permeable and electrically and thermally conductive structure (exemplified by (112) in Figures 2A and 2B) in electrical connection to an electric power source, in which the ice protection system is thermally insulated from the permeable front skin.



The Examiner has asserted that one of ordinary skill in the art at the time of invention of the subject matter of Claims 1-9 and 16 would have found these claims obvious in view of the combined teachings of Hom or Mnich in view of Dean. Hom, Mnich and Dean are discussed in detail in the Amended Appeal Brief dated February 10, 2006 ("the Amended Appeal Brief").

As set for in the Amended Appeal Brief, the Examiner has failed to establish the *prima facie* obviousness of Claims 1-9 and 16. It is axiomatic that the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. See MPEP § 2143.01 at p. 2100-137 (Rev. 3, August 2005) (citation omitted). Moreover, to establish *prima facie* obviousness based upon the assertion that the references relied upon teach that all aspects of the claimed invention were individually known in the art, the Examiner must provide some objective reason to combine the teachings of the references. See *id.* In other words, there must be some suggestion or motivation to combine the teachings of the references, and in addition, there must be a reasonable expectation of success resulting from the combination. See, e.g., *In re Koztrab*, 217 F.3d 1365, 1370, 55 U.S.P.Q.2d 1313, 1316 (Fed. Cir. 2000) (to establish obviousness, there must be some suggestion, motivation, or teaching of the desirability of making the specific claimed combination). The teaching or suggestion to make the asserted combination and the reasonable expectation of success must both be found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, not based on Appellants' disclosure. *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991).

In the present case, the Examiner has failed to provide any reason why one of ordinary skill in the art aware of the noise attenuating acoustic panels of Hom or Mnich would have been motivated to look to the ice protection system of Dean. Noise attenuation (as in Hom and Mnich) is an environmental issue, whereas aircraft ice protection (as in Dean) is an aircraft safety and operability issue. These two problems, by nature, require very different solutions. The Examiner has offered no explanation as to why one of ordinary skill in the art would look to combine proposed solutions to the environmental problem of aircraft engine noise attenuation (*i.e.*, Hom or Mnich) with a proposed solution to the aircraft safety and operability problem of ice formation (*i.e.*, Dean). The mere fact that both problems relate to aircraft is insufficient to motivate one of ordinary skill in the art to provide solutions to both problems simultaneously. At

most, the Examiner has offered an “obvious to try” argument, which is an improper basis for an obviousness rejection. *In re O'Farrell*, 853 F.2d 894, 903, 7 U.S.P.Q.2d 1673, 1681 (Fed. Cir. 1988).

Moreover, the Examiner has failed to explain why one of ordinary skill in the art would seek to combine an ice protection system used on a solid surface such as an aircraft wing (as in Dean) on perforated acoustic panels (as in Hom and Mnich). Accordingly, in view of the failure of the teachings of the cited prior art to suggest the combination of Hom or Mnich with Dean, the Examiner is impermissibly employing hindsight in combining the acoustic panels of Hom or Mnich and the ice protection system of Dean. *See, e.g., In re Skoll*, 523 F.2d 1392, 1396, 187 U.S.P.Q. 481, 484 (CCPA 1975) (the prior art references, viewed by themselves and not in retrospect, must suggest doing what the applicant had done). One cannot “import hindsight into the obviousness determination by using the invention as a roadmap to find its prior art components.” *Princeton Biochemicals Inc. v. Beckman Coulter Inc.*, 411 F.3d 1332, 75 U.S.P.Q.2d 1051 (Fed. Cir. 2005).

In addition, even assuming *arguendo* that one of ordinary skill in the art would be motivated to combine the acoustic panels of Hom or Mnich with the ice protection system of Dean, such a combination does not establish a *prima facie* case of obviousness of Claims 1-9 and 16. To establish a *prima facie* case of obviousness, every element of the invention as claimed must be found in the prior art. *See In re Rouffet*, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1457 (Fed. Cir. 1998). However, the combination of Hom or Mnich with Dean does not fulfill this requirement.

More particularly, all of Claims 1-9 and 16 require an acoustic panel having an ice protection system including an acoustically permeable and electrically and thermally conductive structure. As admitted by the Examiner, Hom and Mnich disclose acoustic panels, but are silent as to the incorporation of an ice protection system. The Examiner has asserted that Dean teaches an ice protection system that has an acoustically permeable and electrically and thermally conductive structure. *See* Final Office Action, p. 2. However, Dean et al. fails to make any statement regarding the acoustic permeability of its ice protection system. Moreover, as discussed above, Figure 2 of Dean depicts the adhesive layer (11) applied to the wing skin (10), the metal foil sheet (12) applied to the skin (10), the metal foil sheet (12) applied to the adhesive

layer (11), the insulating layer (13) applied to the sheet (12), the metallic layer (14) applied to the outer surface of the insulating layer (13), the insulating material (15) applied to the metallic layer (14) and the paint layer (16) applied to the insulating layer (15). *See* Dean, Fig. 2 and col. 1, line 60-col. 2, line 21. The Examiner initially failed to offer any objective evidence that these non-perforated layers are acoustically permeable, either alone or in combination. Thus, the Examiner failed to establish that Dean discloses or suggests an ice protection system having an acoustically permeable structure. Accordingly, the Examiner's conclusion that the ice protection system of Dean is acoustically permeable was pure speculation, unsupported by any objective evidence of record.

In an attempt to overcome this deficiency in Dean, the Examiner cited for the first time in the Examiner's Answer dated May 2, 2006 ("the Examiner's Answer"), the Putzeys article and the Scott article. According to the Examiner, these two articles "show that sounds through walls without perforations are commonly well known" (Examiners Answer, p 4), and thus overcome the deficiency of Dean. The Examiner has provided no explanation as to why these articles were not cited prior to applicant's filing of a Notice of Appeal.

However, even if one of ordinary skill in the art would have been motivated to combine the acoustic panels of Hom or Mnich with the ice protection of Dean, there is no teaching or suggestion that the multi-layered, insulated structure of Dean could successfully be employed as an acoustically permeable structure. In fact, such a combination would impermissibly change the basic principle of operation of Dean, which is the use of its multi-layered ice protection system on a solid surface such as wing skin (10), not a perforated or acoustically permeable structure as disclosed by Hom or Mnich. *See In re Ratti*, 270 F.2d 810, 813, 123 U.S.P.Q. 349, 352 (CCPA 1959).

Moreover, as noted at paragraph [0009] of the specification as filed, the prior art hot air aircraft de-icing systems are incompatible with the relatively low temperature capability adhesively bonded honeycomb noise abatement structures (such as the acoustic panels of Hom and Mnich). Thus, there is a long-felt but unsolved need in the art for providing a de-icing system which is compatible with the relatively low temperature capability of adhesively bonded honeycomb noise abatement structures. The present invention as set forth in Claims 1-9 and 16 satisfies this long-felt but unsolved need, and therefore is nonobvious in view of the prior art.

Accordingly, for at least the reasons discussed above, the Examiner's rejection fails to satisfy the requirements of 35 U.S.C. § 103, and Claims 1-9 and 16 are nonobvious in view of the cited prior art.

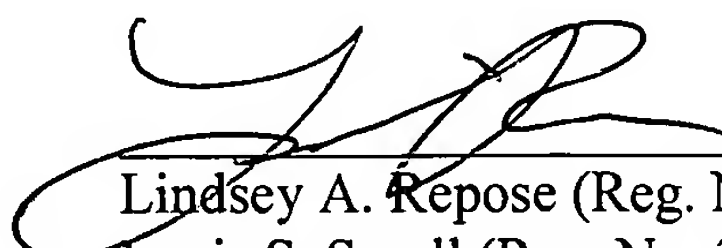
**2. *Claims 10-13 constitute nonobvious subject matter and are patentable under 35 U.S.C. §103 (a) over Hom or Mnich in view of Dean, further in view of Kugelman or Volkner.***

Claims 10-13 directly or indirectly depend from Claim 1 and include all the limitations thereof. As discussed above, Claim 1 is patentable over Hom or Mnich and Dean. Kugelman or Volkner do not cure the deficiencies of Hom or Mnich and Dean, because neither teach an ice protection system that has an acoustically permeable structure. Accordingly, Claims 10-13 are nonobvious in view of the cited prior art.

In view of the arguments above, Appellants respectfully submit that Claims 1-13 and 16 are patentable and urge the Board to reverse all of the Examiner's rejections as to each of these claims.

Respectfully submitted,

Date: 6/30/06

  
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### **CLAIMS APPENDIX**

1. An acoustic panel for use in the inlet lip portion of a gas turbine nacelle, the panel comprising: (a) a solid back skin; (b) an acoustically permeable front skin; (c) a honeycomb cell structure located between the front skin and back skin; and (d) an ice protection system affixed to the front skin, wherein the ice protection system includes an acoustically permeable and electrically and thermally conductive structure which includes means for connection to an electric power source, and the structure is thermally insulated from the front skin.
2. The acoustic panel of Claim 1, in which the ice protection system includes a low power electronic ice protection system.
3. The acoustic panel of Claim 1, in which the acoustically permeable front skin is perforated.
4. The acoustic panel of Claim 1, in which the honeycomb structure is adhesively bonded to the front skin and the back skin.
5. The acoustic panel of Claim 1, in which the front skin and the back skin are each an aluminum sheet material.
6. The acoustic panel of Claim 1, in which the front skin, back skin and honeycomb cell structure are each a graphite/epoxy laminate.
7. The acoustic panel of Claim 1, in which the ice protection system includes a stainless steel wire mesh adhesively bonded to the outer surface of the front skin.

8. The acoustic panel of Claim 1, in which a permeable, thermally insulating material is located between the electronic ice protection system and the front skin.
9. The acoustic panel of Claim 8, in which the insulating material is adhesively bonded to the outer surface of the front skin, and the electronic ice protection system is adhesively bonded to the insulating material.
10. The acoustic panel of Claim 1, in which the nacelle has a highlight, and a parting strip is located proximate to the nacelle highlight.
11. The acoustic panel of Claim 10, in which the parting strip is an electrified grid material which carries a watt density of up to about 20W/sq. in.
12. The acoustic panel of Claim 1, in which the ice protection system comprises a plurality of sections which extend around the circumference of the inlet lip of the nacelle.
13. The acoustic panel of Claim 12, in which power is supplied selectively or sequentially to the sections.
16. An inlet lip for an aircraft gas turbine engine nacelle, the inlet lip comprising: (a) an acoustic panel structure including a solid back skin, an acoustically permeable front skin, and a honeycomb cell structure there between; and (b) an ice protection system located on the front skin, wherein the ice protection system includes an acoustically permeable and electrically and thermally conductive structure in electrical connection to an electric power source, and the ice protection system is thermally insulated from the permeable front skin.

### **EVIDENCE APPENDIX**

Copies of the Hom, Mnich, Dean, Kugelman and Volkner patents discussed herein are available in the prosecution history. The Hom, Mnich, Dean, Kugelman and Volkner patents were all entered in the record by the Examiner in the Office Action mailed October 5, 2004. There is no other evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131 or 1.132 or any other evidence entered by the Examiner and relied upon by Appellant in this appeal.

**RELATED PROCEEDINGS APPENDIX**

There are no decisions rendered by a court or the Board in any proceeding identified pursuant to 37 C.F.R. § 41.37(c)(1)(ii) relating to this appeal.